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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/620,958	07/16/2003	Kazutoshi Kaji	833394.0009	9990

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EXAMINER	
QUASH, ANTHONY G	

ART UNIT	PAPER NUMBER
2881	

DATE MAILED: 07/01/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/620,958	KAJI ET AL.	
	Examiner	Art Unit	
	Anthony Quash	2881	

-- The MAILING DATE of this communication appears on th cover sh et with the correspond nce address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01 March 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-11* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *2,4-7 and 11* is/are allowed.

6)☒ Claim(s) *1,3 and 8-10* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☒ Interview Summary (PTO-413) Paper No(s)/Mail Date. *6/27/04* .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. Applicants' amendment, dated 3/1/04, has over come the objections to the drawings and 112 rejections listed in the last office action, dated 12/24/03.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1,3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oikawa Tetsuo [JP 58-032347]. As per claim 1, Oikawa Tetsuo [JP 58-032347] teaches an electron microscope comprising an electron beam source (1) for emitting an electron beam, an energy filter (7) having an energy dispersion section for dispersing the electron beam according to electron energies, and a slit (40) for selecting the electron beam dispersion by the energy dispersion section, an objective lens (5), an energy filter electron beam detector (43) for detecting an amount of the electron beam selected by the energy filter, wherein the energy dispersion section is adapted selectively to turn on and off, the slit (40) disposed in a trajectory of the electron beam dispersed by the energy dispersion section. However, Oikawa Tetsuo [JP 58-032347] does not explicitly state that the electron beam bypasses the slit when the energy dispersion section is turned off. Instead Oikawa Tetsuo [JP 58-032347] teaches that

the slit can be removed and the beam can be directed to the image plate during the time the dispersion section is turned off which is equivalent to the electron beam bypassing the slit when the energy dispersion section is turned off. See Oikawa Tetsuo [JP 58-032347] abstract, figs. 1,2, col. 6 lines 15-30. Therefore, because these two means of directing a beam of electrons toward a sample while having the slit removed from the trajectory of the beam were art-recognized equivalents at the time the invention was made, one of ordinary skill in the art would have found it obvious to substitute the apparatus for the removal of slit in Oikawa Tetsuo [JP 58-032347] for the means for bypassing the slit when the energy dispersion section is turned off in order to have the sample receive the full dosage of the beam.

As per claim 3, Oikawa Tetsuo [JP 58-032347] teaches the energy filter be disposed between the electron beam source and a specimen or downstream the specimen relative to a direction of traveling of the electron beam, and the electron beam selected by the energy filter being employed for observing the specimen. See Oikawa Tetsuo [JP 58-032347] abstract, figs. 1,2, col. 6 lines 15-30.

2. Claims 8-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Krivanek [126] in view of Kundmann [524]. As per claim 8, Krivanek [126] teaches a method for adjusting an electron microscope for observation of a specimen (50), the steps of the method comprising: carrying out dispersion with an energy dispersion section (12) according to electron energies for an electron beam before the electron beam illuminates the specimen (50) or after the electron beam transmits through the specimen (50) selecting the post-dispersion electron beam with an energy filter

having a slit (30) including at least two shields (see fig. 2 of Krivanek [126], wherein the sides of the slit act as shields); employing the electron beam selected with the energy filter for the observation of the specimen (50), wherein the method further comprises: detecting the intensity of an electron beam passing through the slit (30) as a result of a previous step; and controlling the position of the electron beam on the slit according to a change in the intensity. See Krivanek [126] abstract, figs. 1-2, col. 3 lines 1-60, column 4, col. 5 lines 20-55, and col. 6 lines 50-65. However, Krivanek [126] does not specifically teach repeated shifting of a position of the selected electron beam on the slit at least once from a first position where the selected electron beam is intercepted by a first shield, via an opening of the slit, to a second position where the selected electron beam is intercepted again by a second shield. Kundmann [524] does teach repeatedly shifting of a position of the selected electron beam on the slit at least once from a first position where the selected electron beam is intercepted by a first shield (U in fig. 2 of Kundmann [524]), via an opening of the slit (128s), to a second position where the selected electron beam is intercepted again by a second shield (L in fig. 2 of Kundmann [524]). See Kundmann [524] abstract, figs. 1-2,3-11, col. 1 lines 35-67, column 2, col. 3 lines 30-40, 55-67, col. 4 lines 25-45, col. 5 lines 50-67, columns 6-7, col. 8 lines 20-57, col. 9 lines 5-10,15-22,45-50, col. 12 lines 59-65, and col. 16 lines 35-40. Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to repeatedly shifting of a position of the selected electron beam on the slit at least once from a first position where the selected electron beam is intercepted by a first shield, via an opening of the slit, to a second position where the selected electron beam

is intercepted again by a second shield in order to aid in the alignment, and filtering of the electron beam.

As per claim 9, Kundmann [524] teaches shifting one of each shield and the whole slit back and forth at least once; detecting the intensity of an electron beam passing through the opening of the slit corresponding to displacement of the slit; and controlling the position of the electron beam on the slit according to the displacement of the slit and a change in the intensity of the electron beam. See Kundmann [524] abstract, figs. 1-2,3-11, col. 1 lines 35-67, column 2, col. 3 lines 30-40, 55-67, col. 4 lines 25-45, col. 5 lines 50-67, columns 6-7, col. 8 lines 20-57, col. 9 lines 5-10,15-22,45-50, col. 12 lines 59-65, and col. 16 lines 35-40.

As per claim 10, Kundmann [524] teaches shifting an area illuminated by an electron beam by a larger distance than a width of the opening of the slit; detecting the intensity of the electron beam passing through the opening of the slit corresponding to displacement of the electron beam; and controlling the position of the electron beam on the slit according to the displacement of the electron beam and a change in the intensity of the electron beam. See Kundmann [524] abstract, figs. 1-2,3-11, col. 1 lines 35-67, column 2, col. 3 lines 30-40, 55-67, col. 4 lines 25-45, col. 5 lines 50-67, columns 6-7, col. 8 lines 20-57, col. 9 lines 5-10,15-22,45-50, col. 12 lines 59-65, and col. 16 lines 35-40.

3. Claims 8-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsuno [2001/0052744] in view of Kundmann [524]. As per claim 8, Tsuno [2001/0052744] teaches a method for adjusting an electron microscope for observation

of a specimen (33), the steps of the method comprising: carrying out dispersion with an energy dispersion section (22) according to electron energies for an electron beam before the electron beam illuminates the specimen (33) or after the electron beam transmits through the specimen (33) selecting the post-dispersion electron beam with an energy filter having a slit (24) including at least two shields (4_1,4_2); employing the electron beam selected with the energy filter for the observation of the specimen (33), wherein the method further comprises: detecting the intensity of an electron beam passing through the slit (24) as a result of a previous step; and controlling the position of the electron beam on the slit according to a change in the intensity. See Tsuno [2001/0052744] abstract, figs. 1,5,9-12, paragraphs [0001-0018], [0032], [0034], [0041], [0044-0045], [0054], and [0057-0058]. However, Tsuno [2001/0052744] does not specifically teach repeated shifting of a position of the selected electron beam on the slit at least once from a first position where the selected electron beam is intercepted by a first shield, via an opening of the slit, to a second position where the selected electron beam is intercepted again by a second shield. Kundmann [524] does teach repeatedly shifting of a position of the selected electron beam on the slit at least once from a first position where the selected electron beam is intercepted by a first shield (U in fig. 2 of Kundmann [524]), via an opening of the slit (128s), to a second position where the selected electron beam is intercepted again by a second shield (L in fig. 2 of Kundmann [524]). See Kundmann [524] abstract, figs. 1-2,3-11, col. 1 lines 35-67, column 2, col. 3 lines 30-40, 55-67, col. 4 lines 25-45, col. 5 lines 50-67, columns 6-7, col. 8 lines 20-57, col. 9 lines 5-10,15-22,45-50, col. 12 lines 59-65, and col. 16 lines 35-40. Therefore, it

would have been obvious to a person of ordinary skill in the art at the time the invention was made to repeatedly shifting of a position of the selected electron beam on the slit at least once from a first position where the selected electron beam is intercepted by a first shield, via an opening of the slit, to a second position where the selected electron beam is intercepted again by a second shield in order to aid in the alignment, and filtering of the electron beam.

As per claim 9, Kundmann [524] teaches shifting one of each shield and the whole slit back and forth at least once; detecting the intensity of an electron beam passing through the opening of the slit corresponding to displacement of the slit; and controlling the position of the electron beam on the slit according to the displacement of the slit and a change in the intensity of the electron beam. See Kundmann [524] abstract, figs. 1-2,3-11, col. 1 lines 35-67, column 2, col. 3 lines 30-40, 55-67, col. 4 lines 25-45, col. 5 lines 50-67, columns 6-7, col. 8 lines 20-57, col. 9 lines 5-10,15-22,45-50, col. 12 lines 59-65, and col. 16 lines 35-40.

As per claim 10, Kundmann [524] teaches shifting an area illuminated by an electron beam by a larger distance than a width of the opening of the slit; detecting the intensity of the electron beam passing through the opening of the slit corresponding to displacement of the electron beam; and controlling the position of the electron beam on the slit according to the displacement of the electron beam and a change in the intensity of the electron beam. See Kundmann [524] abstract, figs. 1-2,3-11, col. 1 lines 35-67, column 2, col. 3 lines 30-40, 55-67, col. 4 lines 25-45, col. 5 lines 50-67, columns 6-7,

col. 8 lines 20-57, col. 9 lines 5-10,15-22,45-50, col. 12 lines 59-65, and col. 16 lines 35-40.

Allowable Subject Matter

4. Claims 2,4-7,11 are deemed allowable over the prior art of record.

The following is a statement of reasons for the indication of allowable subject matter: The prior art of record does not disclose nor teach, "...cyclically shifting an area on the slit illuminated by the electron beam and detected by the energy filter electron beam detector, while the energy dispersion section is turned on," in combination with the rest of the claim. Since this aspect is not taught nor disclosed in the prior art of record. Claims 2, and 4-7 are deemed allowable over the prior art of record.

Response to Arguments

5. Applicant's arguments filed 3/1/04 have been fully considered but they are not persuasive. With respect to the applicants' arguments concerning claim 1, that it would not have been obvious to modify the Tetsuo [JP 58-032347] structure in order to have the slit bypassed by the beam (out of the path of the beam) when the energy dispersion section is turned off, the examiner maintains that it would have been obvious to do so. Tetsuo [JP 58-032347] clearly teaches the removing the slit from the path of the beam when the dispersion is turned off. Tetsuo [JP 58-032347] also teaches the slit being located in the path of the beam when the energy dispersion is turned on. See Tetsuo [JP 58-032347] abstract. It is the examiner's view that the device in Tetsuo [JP 58-

032347] manually performs the equivalent function as that claimed by applicant in claim. Therefore it would have been obvious to one of ordinary skill in the art to have the slit bypassed by the beam (out of the path of the beam) when the energy dispersion section is turned off, since it has been held that broadly providing a mechanical or automatic means to replace manual activity which has accomplished the same result involves only routine skill in the art.

With respect to the applicants' arguments concerning claim 8, Kundmann [5,798,524] not teaching the repeating shifting of a position of the selected electron beam on the slit at least once from a first position where the selected electron beam is intercepted by a first shield, via an opening of the slit, to a second position where the selected electron beam is intercepted again by a second shield, it is the examiner's view that Kundmann [5,798,524] teaches this aspect or at least the equivalent thereof. Kundmann [5,798,524] clearly teaches Kundmann [5,798,524] moving the shields to position the beam upon and then detecting the intensity of the beam passing through the slit as a result of the repeated movement. See Kundmann [524] abstract, figs. 1-2,3-11, col. 1 lines 35-67, column 2, col. 3 lines 30-40, 55-67, col. 4 lines 25-45, col. 5 lines 50-67, columns 6-7, col. 8 lines 20-57, col. 9 lines 5-10,15-22,45-50, col. 12 lines 59-65, and col. 16 lines 35-40. This is clearly equivalent to applicants' invention since the objective is to measure the beam current coming through the slit when the beam deflected to different positions, which is equivalent to measuring the beam current which is partially blocked by the slit as the slit moves to different positions.

Conclusion

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anthony Quash whose telephone number is (571)-272-2480. The examiner can normally be reached on Monday thru Friday 9 a.m. to 5 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John R. Lee can be reached on (571)-272-2477. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A. Quash

6/27/04

NIKITA WELLS
PRIMARY EXAMINER

06/28/04